



# Power Control and Distribution

## MasterSwitch™ Series

Remote power distribution units  
for network administrators,  
Co-Location facilities, ISPs,  
and applications where remote  
control of outlets is required



# MasterSwitch™ Series

## MasterSwitch Features and Benefits

- Remote re-boot of network equipment
- 8 individually-controlled outlets for complete and flexible management of connected equipment
- WEB, SNMP & Telnet control—manage connected devices via a web-based interface or with native SNMP management platforms and/or Telnet.
- Horizontally-mounted using 1U space
- Universal power supply—supports power ranges from 90V to 250V



Part Number AP9211  
(AP9212 not shown)

The MasterSwitch Series provides a variety of solutions for an array of applications that exist in the technology industry. While every product in the series has the base functionality to allow for remote rebooting or power control of attached equipment, each new addition to the series provides added features targeted to specific markets and needs. These markets include server farms, datacenters, branch offices, ISPs, and Co-Location facilities including many other applications. Issues that can be resolved through use of the MasterSwitch Series range from remotely rebooting individual devices to maximizing runtime based on power anomalies, toggling power based on environmental anomalies, and monitoring current.

### APC MasterSwitch units share the following features:

#### Reboot network equipment

The MasterSwitch Series eases the burden of managing remote sites and maximizes the uptime of servers and internetworking equipment. MasterSwitch units offer 8 relay-controlled outlets. Each outlet offers independent switching of power to a connected load, which allows remote power control without affecting other attached equipment. Managing a remote site by using a field technician to reboot a locked-up server can negatively impact a company's bottom line. The MasterSwitch Series eliminates such visits for more cost-effective network management via remote access.

#### MasterSwitch products feature embedded Web-based management

An intuitive, low-bandwidth graphical user interface (GUI) is available and can be accessed by any Web browser. Security for this interface follows the HTTP 1.0 password standard. Additionally, for enhanced security, MD-5 authentication is a built-in option of any MasterSwitch. The interface also lets the user set links to the connected equipment, other managed devices, or to APC's Web site and on-line customer support.

#### MasterSwitch units provide easy installation

To make installation as simple as possible, the MasterSwitch Series can be configured over the network or through a local terminal program by utilizing APC's Web Wizard software. This allows a MasterSwitch to be controlled through a remote terminal session. BOOTP is included for automatic IP address assignment. If BOOTP is not available on the user's network, the device's IP address can be assigned via the serial interface. Simply use a Web browser, an SNMP management system, or a terminal program to control power to your connected devices.

#### Individual Outlet Control

MasterSwitch products provide power solutions for co-locators (COLOs) and Internet Service Providers (ISPs). COLOs and ISPs can take control of their businesses by giving control back to their customers. This is done by administrators assigning individual or multiple outlet control to user accounts. Customers then have the ability to control their equipment's power without on-site intervention.

# MasterSwitch™: Avoid costly and time-consuming trips to remote locations.

## Remote on/off and reboot

MasterSwitch (AP9211/AP9212) is a power distribution unit that targets server farms, datacenters, and branch office locations. The primary function of this device is for simple on, off, reboot control of remote equipment. The MasterSwitch includes Flash upgrade capabilities of the firmware via the Internet so future enhancements can easily be installed in the field. It also includes MD-5 security adds extra protection against unauthorized access by requiring an authentication phrase to be utilized. Each MasterSwitch includes the standard APC Web interface so that it is easy to use with all other APC web enabled devices. The MasterSwitch has a Universal Power Supply that allows it to be used from 90V to 250V applications depending on the outlet requirement. APC offers both NEMA 5-15 (AP9211) and IEC 320 (AP9212) outlet equipped units.

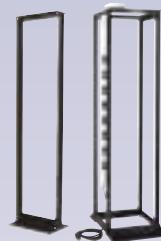
## Application

The MasterSwitch On/Off/Reboot is ideal for any situation where simply rebooting or power cycling is required of equipment or locked up servers. When running product is in remote locations the cost of on-site intervention to cycle power to locked up servers can be dramatic. The MasterSwitch allows for this task to be performed from anywhere that the WAN or World Wide Web can be accessed. Once a problem with a piece of equipment is detected the MasterSwitch can be accessed and power cycled to cleanly and easily bring equipment back on-line in a minimum timeframe saving cost of on-site calls and downtime.

## Related APC Remote Location Solutions

### APC 2- and 4-Post Racks:

2-Post Racks and 4-Post Open Frame Racks offer quality solutions for the assembly of rack-mountable networking equipment. The NetShelter 2-Post Rack and 4-Post Open Frame Rack are designed to accommodate most rack-mountable networking and internetworking equipment.



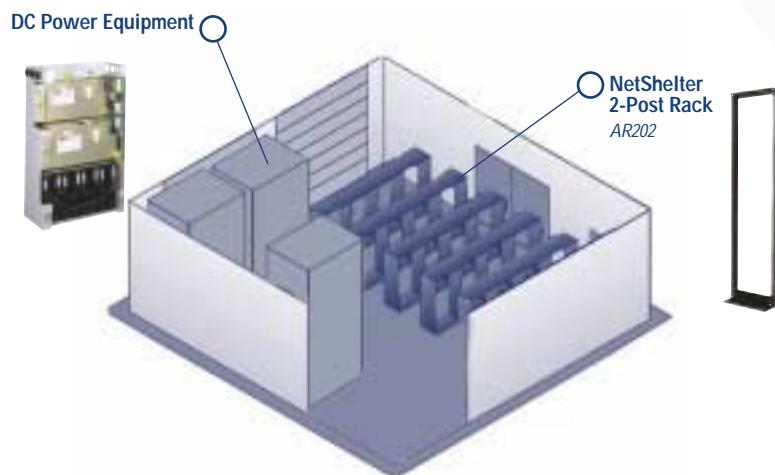
### DC Power Solutions:

APC's distribution cabinets, power racks, modular power shelves, system monitoring, and battery power management in telecom, datacom, and network applications.



**Remote Location:** Use MasterSwitch to reboot locked-up servers stored in a NetShelter 2-Post rack, avoiding a costly trip to a remote location.

Technical Specifications for MasterSwitch:		
Part #	AP9211	AP9212
<b>Output</b>		
Maximum Output	15A Total	12A total
Receptacle Type	8 NEMA 5-15R	8 IEC C13
Overload Protection	Circuit breaker protected	
<b>Input</b>		
Inout voltage	120V	208V/230V
Input plug type	NEMA 5-15P	IEC C14
Maximum Input	15A	12A
Input Frequency	50-60Hz	50-60Hz
PDU Interfaces	DB-9, RS-232, RJ-45 10Base-T Ethernet for Web/SNMP/Telnet Management	
<b>Environmental</b>		
Operating Temperature	32-113F (0-45C)	
Operating relative humidity	0-95%	
Operating Elevation	0-10000 ft (0-3000 m)	
Storage Temperature	5-113F (-15-45C)	
Storage Relative Humidity	0-95%	
Storage Elevation	0-10000 ft (0-3000 m)	



# MasterSwitch™ *plus*: Maximize runtime by turning off non-critical equipment.

## MasterSwitch *plus* Features and Benefits

- Remote re-boot of network equipment
- 8 individually controlled outlets for complete and flexible management of connected equipment
- WEB, SNMP & telnet control—manage connected devices via a web-based interface or with native SNMP management platforms and/or telnet.
- Horizontally mounted using 1U space
- Graceful Shutdown and Load Shedding—allows for automatic shutdown of connected servers attached to an APC UPS when the UPS enters "On-Battery" state and for the attached outlet to be turned off after the server has confirmed shutdown.
- Annunciator Mode—toggle outlets in response to environmental alarms when used in conjunction with the Environmental Monitoring Card (AP9612TH).

### Remote reboot and loadshedding on non-critical equipment

MasterSwitch *plus* (AP9225) shares all the great features with the MasterSwitch standard product (AP9211/AP9212) yet goes beyond remote on/off reboot capabilities. This unit allows you to communicate with the UPS, monitor the health and status of the UPS, and provide graceful loadshedding and shutdown based on environmental (when used with the AP9612TH) or power anomalies. MasterSwitch *plus* can be programmed to automatically shut down (via PowerChute *plus* software) connected servers attached to an APC UPS when the UPS enters an "on battery" state. The outlets can be assigned priority of shutdown to maximize runtime on critical equipment. Cascading via the MasterSwitch *plus* Expansion Chassis (AP9225EXP) gives the ability to decrease cost by connecting up to 32 servers to one IP address and UPS.

### Application:

The MasterSwitch *plus* is designed not only for on/off/reboot functionality, but is ideal for shedding load of non mission-critical devices during power anomalies. Loadshedding of these devices allows for maximum runtime of mission critical equipment such as web servers that are receiving orders from customers. Small offices, datacenters, or server farms can take advantage of the automated features that MasterSwitch *plus* has once programmed to react to UPS commands. The device can also work with the Environmental Monitoring Card (AP9612TH) to allow outlets to toggled based on environmental alarms. For instance, a fan installed into a NetShelter can be plugged into an outlet on the MasterSwitch *plus* and when the enclosure reaches a certain temperature the fan will be automatically powered until the rack cools down to an appropriate level. These features allow for maximum runtime and availability.



Part Number AP9225/AP9225EXP

## Related APC Datacenter Solutions

### Technical Specifications for MasterSwitch *plus*:

Part#	AP9225/AP9225EXP
<b>Output</b>	
Maximum Output	15A Total
Receptacle type	8 NEMA 5-15R
Overload Protection	Circuit breaker protected
<b>Input</b>	
In-out voltage	120V
Input plug type	NEMA 5-15P
Maximum Input	15A
Input Frequency	50-60Hz
PDU Interfaces	DB-9 RS-232; RJ-45 10Base-T Ethernet for Web/SNMP/Telnet management
<b>Environmental</b>	
Operating Temperature	32-113F (0-45C)
Operating relative humidity	0-95%
Operating Elevation	0-10000 ft (0-3000 m)
Storage Temperature	5-113F (-15-45C)
Storage Relative Humidity	0-95%
Storage Elevation	0-50000 ft (0-15000m)

### APC Environmental Monitoring Card:

APC SmartSlot™ UPS accessory that tracks temperature, humidity, fire, water, smoke, unauthorized entry, or physical security conditions in racks, computer rooms, and datacenters.



### APC PowerChute® *plus*:

Power management software providing complete administration and monitoring of APC UPSs in local area networks.



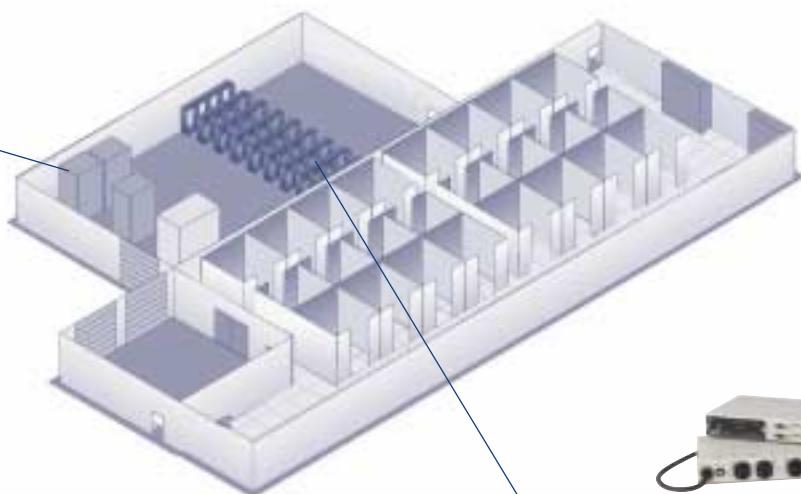
### APC NetShelter Rack Environments

APC NetShelter rack environments are the premium solution for secure, managed networks. NetShelter Enclosures come in either 42U or smaller 22U options. The 42U enclosure also comes in a High-Density version with a vented front door. Expansion 42U units can also be connected as your datacenter grows. APC also offers NetShelter Racks in either 2-Post or 4-Post Open Frame configurations.



**Datacenter:** Use MasterSwitch *plus* and the Environmental Monitoring Card to control and manage power to servers and fans mounted in a NetShelter based on power and environmental alarms. The MasterSwitch *plus* is an ideal way to maximize runtime of mission-critical equipment.

NetShelter Enclosure  
AR1000A



NetShelter 2-Post Rack AR202,  
with MasterSwitch *plus* AP9225



# MasterSwitch™ Vertical Mount:

## Prevent downtime without loss of rack space.

### MasterSwitch Vertical Mount Features and Benefits

- Current monitoring —measures the current being drawn and provides an overload warning and/or user definable load threshold.
- Remote re-boot of network equipment
- 16 powered outlets :
  - 8 individually controlled outlets for complete and flexible management of connected equipment
  - 8 outlets always on
- WEB, SNMP & Telnet control—manage connected devices via a Web-based interface or with native SNMP management platforms and/or Telnet.
- Vertically mounted using zero 'U' space
- Universal power supply—supports power range from 90V to 250V
- Daisy chain up to 4 units—synchronize outlets to reboot at the same time for equipment with redundant power supplies.



#### Current Monitoring

MasterSwitch Vertical Mount (VM) current monitoring capabilities allow you to ensure that the unit is not overloaded, all but eliminating the possibility of your load being dropped. Audible, visible and network alarms based on user-definable thresholds keep the user informed of possible problems.

#### Takes up zero 'U' space

MasterSwitch VM provides remote connectivity and management of power to connected devices with a zero 'U' chassis designed to optimize rack environments. ISPs and Co-Location managers will find MasterSwitch VM to be a convenient tool for managing power to networking (servers) and internetworking (routers, hubs or switches) equipment from anywhere remote network connectivity is possible. *Note: The AP9221 and AP9222 ships with a control unit that has optional rack mounting ears. If these ears are used, 1U of rack space is required.*

#### Controllable Outlets

MasterSwitch VM is a zero 'U' device with many user-friendly features. These include sixteen outlets (8 switchable / 8 always on), 20A hard wire capability, rack-mount brackets, and (LCD) alerts based on user definable thresholds. The VM is cascadeable with up to 3 additional expansion chassis which allow for 32 outlets to be controlled via one IP address.

#### Application

MasterSwitch VM provides the ability to manage the current draw and set alarm thresholds based on customer requirements while still providing the remote on/off/reboot capabilities found in the MasterSwitch series. Current monitoring at the rack allows data center managers to avoid overloads through use of alarm thresholds. Any controllable outlets not being used can be turned off. In addition, it mounts vertically requiring zero 'U' space allowing maximum use of rack for network equipment. These three main features address the major problems that can be found in Co-Location/ISP and Datacenter facilities.

Part Number AP9221 (AP9222 not shown)

Technical Specifications for MasterSwitch VM:		
Part#	AP9221	AP9222
<b>Output</b>		
Maximum Output	20A Total (15A per outlet)	16A Total (10A per outlet)
Receptacle type		
(16) NEMA 5-15R	(8) IEC C13	
<b>Input</b>		
Input voltage	90-132V	90-253V
Input plug type	NEMA 5-15P or hardwire in	IEC C20
Maximum Input	20A	16A
Input Frequency	50-60Hz	50-60Hz
PDU Interfaces	DB-9 RS-232, RJ-11, RJ-45 10Base-T Ethernet for Web/SNMP/Telnet management	
<b>Environmental</b>		
Operating Temperature	32-113F (0-45C)	32-113F (0-45C)
Operating relative humidity	0-95%	0-95%
Operating Elevation	0-10000 ft (0-3000 m)	0-10000 ft (0-3000 m)
Storage Temperature	5-113F (-15-45C)	5-113F (-15-45C)
Storage Relative Humidity	0-95%	0-95%
Storage Elevation	0-50000 ft (0-15000m)	0-50000 ft (0-15000m)

## Related APC Co-location Solutions

### APC NetShelter Rack Environments

APC NetShelter rack environments are the premium solution for secure, managed networks. NetShelter Enclosures come in either 42U or smaller 22U options. The 42U enclosure also comes in a High-Density version with a vented front door. Expansion 42U units can also be connected as your datacenter grows. APC also offers NetShelter Racks in either 2-Post or 4-Post Open Frame configurations.

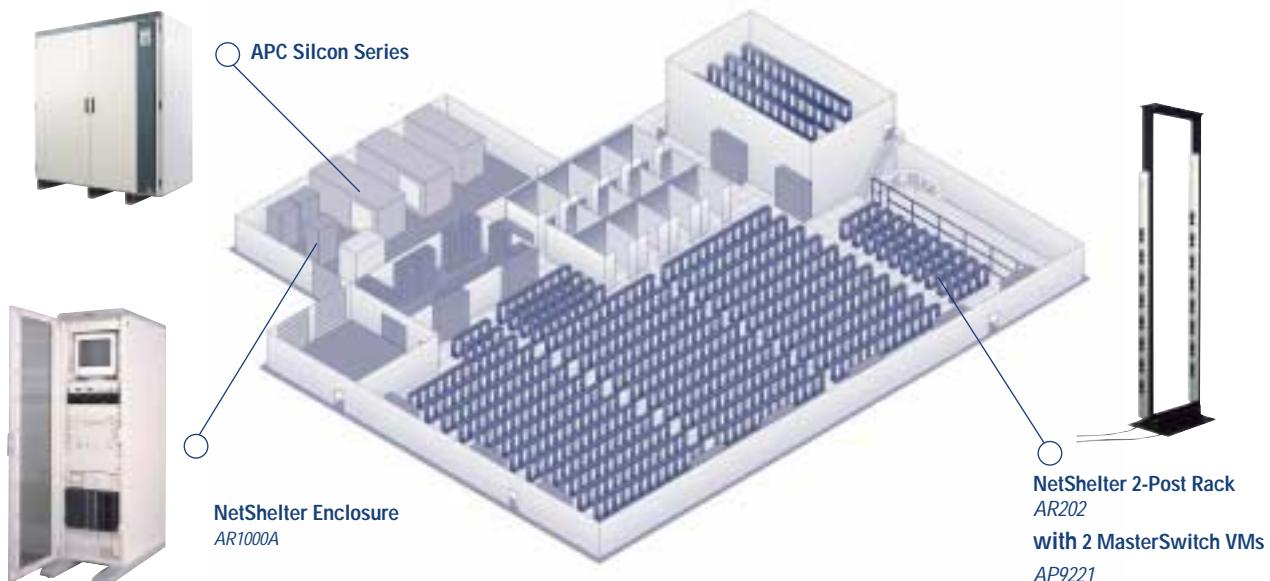


### APC Silcon:

3-Phase on-line power protection device with N+1 capability and load capacity to serve a broad range of electrical equipment – from mainframe computers to enterprise-wide installations, production lines, electronic control systems and telecommunication equipment.



**Co-location Facility:** MasterSwitch VM and NetShelter 2-Post Racks allow for current monitoring at each rack to avoid overloads.



# MasterSwitch™ Power Receptacles

## Increase MasterSwitch load capacity

APC MasterSwitch Power Receptacles increase the maximum load controlled by a MasterSwitch unit by allowing for loads to be shifted from the MasterSwitch to a separate branch circuit. The variety of Power Receptacles addresses different amperage (15A, 20A, 30A) and voltage (100V, 120V, 208V, 230V) needs. The Power Receptacles have the same dimensions to allow for custom configurations of up to three various Power Receptacle units per Power Receptacle Tray (AP9510BAY).

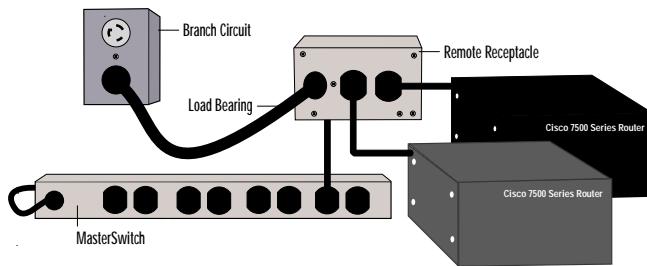


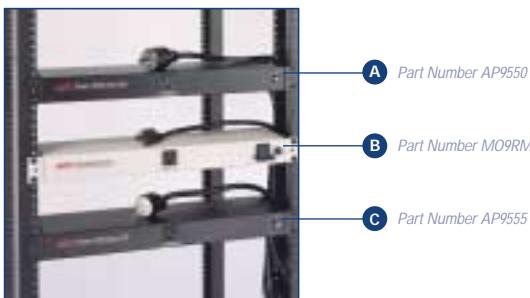
Illustration depicts two Cisco routers connected to and managed via an APC remote receptacle.



## Power Distribution Units (PDUs)

### Distribute power throughout your rack

APC now offers a variety of power strips that allow users to distribute power throughout an enclosure. Whether the enclosure is located in a large datacenter or a small branch office, power must be distributed to a variety of equipment. The AP9550 (**A**) is a 20A PDU with a NEMA L5-20 input and eleven (11) NEMA 5-15 output receptacles. The MO9RM (**B**) is a 15A PDU device with nine (9) NEMA 5-15 output receptacles. The AP9555 (**C**) is a 20A PDU with NEMA 5-20 input and eleven (11) NEMA 5-15 output receptacles. APC also offers the AP9553 (not shown), which is a 16A PDU with a detached power cord with IEC 320 C19 and C20 inputs and eleven (11) IEC 320 C13 output receptacles. All of the units are mounted horizontally needing only 1U space in a rack environment.



Power Distribution Units Product Chart

Part #	Input V	Input Amps	Plug	Receptacle	U space	Available
MO9RM	120V	15A	NEMA 5-15	(9) NEMA 5-15R	1U	YES
AP9550	120V	20A	NEMA L5-20	(11) NEMA 5-15R	1U	YES
AP9551	120V	20A	NEMA L5-20	(14) NEMA 5-15R	0U	TBD
AP9553	208V/230V	16A	IEC C-19/C-20	(12) IEC C-13R	1U	Q1, 2001
AP9554	208V/230V	16A	IEC C-19/C-20	(14) IEC C-13R	0U	Q1, 2001
AP9555	120V	20A	NEMA 5-20	(11) NEMA 5-15R	1U	YES
AP9556	120V	20A	NEMA 5-20	(10) NEMA 5-15/20TR (1) NEMA 5-15R	1U	Q1, 2001
MXA101	240V	30A	NEMA L14-30	(10) NEMA 5-15R	Floor	YES
MXA102	208V	30A	NEMA L6-30	(4) NEMA L6-20R	Floor	YES
MXA103	240V	30A	NEMA L14-30	(8) NEMA 5-20R	Floor	YES
MXA104	208V	30A	NEMA L6-30	(4) NEMA L6-30R	Floor	YES
MXA105	240V	30A	NEMA L14-30	(4) NEMA L5-30R	Floor	YES
MXA106	208V	30A	NEMA L14-30	(4) NEMA L5-20R	Floor	YES
MXA107	208V	30A	NEMA L6-30	(4) NEMA L6-15R (4) NEMA 6-15R (1) NEMA L6-30R	Floor	YES
MXA108	240V	30A	NEMA L14-30	(6) NEMA L5-15R (2) NEMA L14-30	Floor	YES

APC's quality system is certified by ISO 9002 standards



For more information call:  
Tel: 800 800 4APC - US & Canada  
Tel: 401 789 0204 - World wide

**APC Corporate**  
APC North America  
132 Fairgrounds Road  
West Kingston, RI  
02892 USA  
Call: 800 800 4APC  
Fax: 401 789 3710

**APC Latin America**  
5301 Blue Lagoon Drive  
#610  
Miami, FL 33126 USA  
Call: 305 266 5005  
Fax: 305 266 9695

**APC Europe**  
APC Ireland  
Ballybrit Business Park  
Galway, Ireland  
Call: +353 91 702000  
Fax: +353 91 756909

**APC Asia Pacific**  
APC Australia  
Level 27 Northpoint  
100 Miller Street  
North Sydney, NSW 2060  
Call: +61 2 9955 9366  
Fax: +61 2 9955 2844

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